

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 July 2003 (31.07.2003)

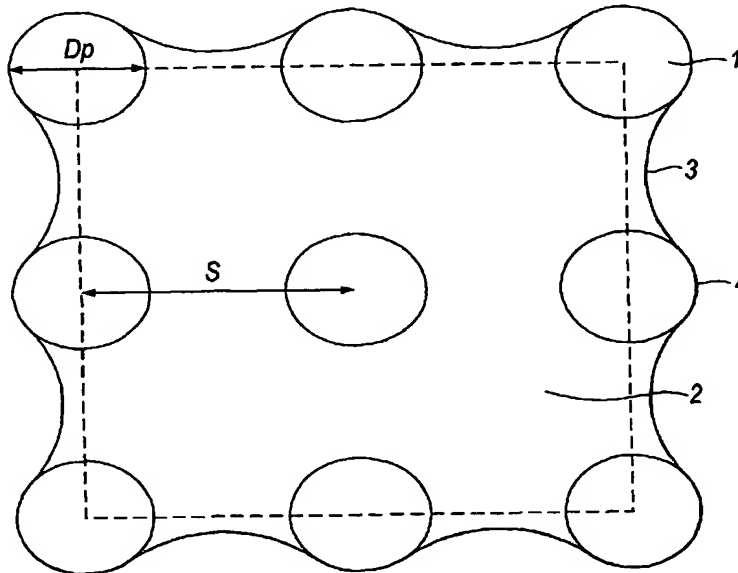
PCT

(10) International Publication Number
WO 03/062540 A1

- (51) International Patent Classification⁷: **E02D 27/14**
- (21) International Application Number: **PCT/GB03/00135**
- (22) International Filing Date: 15 January 2003 (15.01.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0201513.9 23 January 2002 (23.01.2002) GB
- (71) Applicant (for all designated States except US): **CEMENTATION FOUNDATIONS SKANSKA LIMITED** [GB/GB]; Maple Cross House, Denham House, Maple Cross, Rickmansworth, Hertfordshire WD3 9AS (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **ENGLAND, Melvin, Gerrard** [GB/GB]; 14 Scotts Avenue, Sunbury upon Thames, Middlesex TW16 7HZ (GB). **SHOTTON, Peter, Gilbert** [GB/GB]; 80 Straight Bit, Flackwell Heath, Buckinghamshire HP10 9NA (GB).
- (74) Agent: **FENLON, Christine, Lesley**; Haseltine Lake, Imperial House, 15-19 Kingsway, London WC2B 6UD (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: CONSTRUCTION AND DESIGN OF FOUNDATION ELEMENTS



(57) Abstract: The present application relates to method of designing and forming a foundation element by consideration of a number of parameters including the contribution of ground material to the overall bearing capacity of the element. Techniques for analysing the load bearing capacity of a composite foundation element are also described which take into consideration the volume of ground material that exists between neighbouring discrete concrete sections.

WO 03/062540 A1

WO 03/062540 A1



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internat. Application No
PCT/G8 03/00135

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E02D27/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E02D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A X	<p>EP 0 758 699 A (HELMUT HEMMERLEIN GMBH & CO BA) 19 February 1997 (1997-02-19) column 7, line 32 -column 8, line 52; figures 8-11</p> <p>---</p> <p>"Richtlinie für den Entwurf, die Bemessung und den Bau von Kombinierten Pfahl-Plattengründungen" BAUTECHNIK, vol. 77, no. 9, 2000, pages 677-681, XP008016741 page 1, column 1, paragraph 1 -column 2, last paragraph page 3, column 2, paragraph 3 -column 3, paragraph 8; figures</p> <p>---</p> <p style="text-align: center;">-/--</p>	<p>13,17, 19-21 1,2,8, 10,12</p> <p>1,2,4,8, 9,12,13, 17,18</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

7 May 2003

Date of mailing of the international search report

22/05/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Movadat, R

INTERNATIONAL SEARCH REPORT

Internat	Application No
PCT/GB	03/00135

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 715 314 C (GRUEN & BILFINGER AG) 18 December 1941 (1941-12-18) page 2, line 77 - line 122; figures -----	1,2,12, 13,19
A	DATABASE WPI Section PQ, Week 199201 Derwent Publications Ltd., London, GB; Class Q42, AN 1992-005842 XP002240344 "Foundation pile" -& SU 1 625 958 A (TVERSK POLY), 7 February 1991 (1991-02-07) abstract; figures 6,8 -----	5,6,14, 15
A	US 3 621 663 A (OTANI AKEMASA) 23 November 1971 (1971-11-23) column 2, line 50 - line 52; figures 1,2,5 -----	5,6,14, 15
A	GB 1 153 188 A (YOSHIRO TSUZUKI) 29 May 1969 (1969-05-29) page 3, line 62 - line 71; figures 10,11 -----	5,6,14, 15

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internat Application No
PCT/GB 03/00135

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0758699	A	19-02-1997	DE 29512311 U1	01-02-1996
			DE 19535183 A1	13-02-1997
			DE 29601080 U1	04-04-1996
			AT 207168 T	15-11-2001
			DE 59607930 D1	22-11-2001
			EP 0758699 A1	19-02-1997
DE 715314	C	18-12-1941	NONE	
SU 1625958	A	07-02-1991	SU 1625958 A2	07-02-1991
US 3621663	A	23-11-1971	US 3739459 A	19-06-1973
GB 1153188	A	29-05-1969	DE 1584778 A1	22-10-1970
			FR 1489983 A	28-07-1967
			NL 6611307 A ,B	13-02-1967